NOTES ON THE MAMMALS OF MONROE AND PIKE COUNTIES, PENNSYLVANIA.

BY SAMUEL N. RHOADS.

We have much to learn respecting the mammal fauna of the most densely populated and longest settled districts of the United States. To no region is this remark more applicable than the States of Pennsylvania and New Jersey. In the American Naturalist for January, 1893, Mr. Witmer Stone and myself recorded the capture of two new species belonging to genera hitherto unknown to the fauna of New Jersey, and later Mr. Stone described a Cave Rat, belonging to the genus *Neotoma*, from South Mountain, Pennsylvania, which is the first notice we have of the present existence of that genus in the State.

A recent visit to the wilder portions of northeastern Pennsylvania in the interests of natural history enables me to contribute the following notes to our knowledge of the mammals of the region. One week in September was spent at the farm of Mr. Chas. Yaggie, (1,000 ft. alt.), on the west bank of Big Bushkill Creek, in Monroe County, at a point seven miles east of Cresco, where the creek enters the southwestern corner of Pike County. Another week in October was occupied in the vicinity of Dingman's Ferry, Pike County, and for three days I was located at Porter's Lake (1,200 feet alt.), in the same county. Systematic trapping of the smaller mammalia was kept up during my stay at all these localities. On the results of this work and of my inquiries among the woodsmen and older residents of the places visited, the following notes are based. To Dr. Philip Fulmer, of Dingman's Ferry, and Mr. Harvey Eilenberger, of East Stroudsburg, the latter a veteran deer-hunter, whom I had the pleasure of meeting at Porter's Lake, I am chiefly indebted for outside information. The reliability of the statements of these gentlemen on such subjects is unquestionable.

The area covered by my investigations is mainly included in the eastern extension of the Pocono plateau, the average elevation of which, at the points visited, is from 1,000 to 1,500 feet. The greatest

elevation attained was the summit of High Knob, 2,010 feet above the sea; the lowest was at Dingman's Ferry (350 feet), on the Delaware River. The greater part of Porter and Delaware townships have not only been long denuded of their original forests of oak, pine, and hemlock, but have of late years been frequently swept with fire. This fact, combined with the stony character of the soil, gives the country a desolate appearance, and has, undoubtedly, brought about marked changes in the character of its fauna and flora since the advent of the white man. At the present time it is difficult to find, for hundreds of square miles so much as an acre of mature evergreen timber that does not show the ravages of fire and axe. In some places the presence of a watercourse or swamp has retarded these influences and we find a strip of oaks, chestnuts, and pines of comparatively recent growth to relieve the monotony of vast stretches of scrub oak and bushes. Both fauna and flora combine in an interesting manner the features of the Alleghanian, Canadian, and Carolinian life-regions.

The following is a list, with annotations, of those species observed by the writer or reported on by the gentlemen above mentioned:—

1. **Didelphys marsupialis virginiana** (Kerr). Virginian Opossum.

The rare occurrence of this Carolinian species in the fauna of the Pocono plateau of Pike and Monroe counties, even up to an elevation of 1,500 feet is a fact of interest. Specimens have been taken at Porter's Lake. At Dingman's Ferry they are less rare.

2. **Cariacus virginianus** (Bodd.). Virginia Deer.

A buck was killed at Schauff's Pond the first week in October. In spite of the immense range and the sparsely populated condition of the country, the deer are becoming very scarce. Mr. Eilenberger attributes this to the continual destruction of deer by the natives throughout the year, and to the forest fires, which often overtake the newly-born fawns, and in many ways so worry the older deer that they leave the county.

Last year the county newspaper at Milford published its annual authenticated list of deer killed in Pike County during the game season of 1893. They numbered 140.

Mr. Eilenberger thinks a close season of three years and a law to prevent the export of deer for sale would quickly and permanently restock the Pocono wilderness with this noble animal.

3. Cervus americanus (Erxl.). Wapiti.

The "Elk" was probably never as numerous in this region as in the central Alleghany Mountains, those individuals taken in former days being considered by the natives as stragglers from the main body. The last capture in Pike County was probably not later than 1840 or 1845.

Remains of the Bison and Caribou found in Hartman's Cave near Stroudsburg, have been described and figured by Dr. Jos. Leidy in the Penna. Geological Report for 1887.

It is very improbable that either species co-existed in this part of Pennsylvania, with Man.

4. Sciurus carolinensis pennsylvanicus (Ord). Northern Gray Squirrel.

Very few were seen. They are said to be abundant in certain localities of exceptional food supply. The hunters frequently shoot the melanistic form, which is the original variety on which George Ord based his specific name for the "Small Black Squirrel" of Guthrie's Geography, in 1815.

5. Sciurus hudsonicus (Erxleben). Red Squirrel, Chickaree.

Abundant as the sparsely wooded character of the country will permit.

6. Sciuropterus volans (L.) Jordan[1]. Flying Squirrel.

No specimens of this animal were seen. They are reported as numerous, and more frequently found in nests built among the branches of a pine than in hollow trees. It is very probable that this species on the Pocono mountain is nearer to the typical Virginian form than to *sabrinus* of the Canadian fauna, as in the case of *Tamias striatus* and its subspecies *T. s. lysteri.*

7. Tamias striatus (L.). Chipmunk.

In the more mountainous districts the chipmunk is by far the most ubiquitous mammal of its class, the more favorable situations being so thickly tenanted by them as to suggest the Spermophile colonies of the West. They showed no disposition to hibernate up to the last day of my stay (October 14th), though the nights were often frosty.

Pocono chipmunks are referable to typical *striatus* rather than to the Canadian variety, *T. s. lysteri,* which is found in the northwestern parts of Pennsylvania.

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[1] See "Manual of the Vertebrates," 1888, p. 324 (foot-note).

8. Castor fiber canadensis (Kuhl). American Beaver.

The older residents concur in the opinion that the beaver was exterminated nearly fifty years ago in northwestern Pennsylvania. Their dams and meadows are still pointed out in numerous places along the Bushkill and Dingman's creeks.

9. Mus rattus L. Black Rat.

This least offensive member of the Old World Muridæ remains in undisputed possession of the barns and outhouses of the more remote districts, but along the Delaware valley it has given place to the following:—

10. Mus decumanus Pallas. Norway Rat.

As in other places where this pest has foothold, the supply far exceeds the demand.

11. Mus musculus L. House Mouse.

Well represented.

12. Neotoma magister Baird. Alleghany Cave Rat.

Remains of this animal, both fossilized and those apparently quite recent, were taken, in 1880, from Hartman's Cave in Monroe County, by Mr. T. D. Paret, of Stroudsburg.

I have as yet been unable to determine whether this interesting animal is still living in that county or in Pike county. The evidence from every source is negative, and this after the most diligent inquiry.

I personally explored several ledges, notably those of High Knob and the cliffs along the Delaware south of Milford, without finding a trace of their existence. It is not impossible, however, that the recent habitat of this species may be traced, by isolated localities along the Blue Ridge from South Mountain to the Hudson River Highlands. Dr. C. H. Merriam, in a recent communication, states that he believes the specimens of *Neotoma*, taken many years ago on the Hudson near Rockland, New York, to be of this species.

13. Peromyscus americanus (Kerr) Thomas.[2] White-footed Mouse.

Numerous specimens of all ages, taken in three distinctly separated localities, strongly indicate a local variety of this susceptible species, which apparently forms a connecting link between typical Pennsyl-

[2] See Ann. & Mag. N. H., Nov. 1894, p. 364.

vania *americanus* and New England examples of *S. a. canadensis*. Their longer tails and lack of a distinct dorsal stripe indicate this.

The Pocono mice are of a more uniform and much duller brown on the upper parts than south Pennsylvania specimens, and in old individuals there is no trace of the dusky dorsal stripe which is so pronounced in specimens from New Jersey and New England. Specimens from Pike County match one in the collection from Lorne Park, Ontario, and three from Clinton County, Pennsylvania.

14. Fiber zibethicus L. Muskrat.

Not abundant.

15. Arvicola pennsylvanicus (Ord). Common Meadow Mouse.

Abundant, and constant to its typical characters in all situations.

16. Arvicola pinetorum (LeConte). Pine Mouse.

A specimen taken at Yaggie's farm, and another at Porter's Lake attest the semiboreal range of this southern species.

17. Evotomys gapperi (Vigors). Red-backed Mouse.

A rather rare species. Four captures were made at Yaggie's in the more heavily timbered swamps. This animal does not appear to confine its operations to runways or underground as does the true *Arvicola*, but forages about like *Sitomys* in more open situations at the surface.

I took none at Dingman's Ferry, and am of the opinion they are not found much below an altitude of 1,000 feet in Pike County.

18. Synaptomys cooperi Baird. Cooper's Lemming Mouse.

One of these highly interesting rodents was captured in a meadow bordering the Bushkill, on Yaggie's farm. It was taken in a "cyclone trap," set in the runways of *Arvicola pennsylvanicus*, near the edge of a dry swamp. A specimen of the latter species was subsequently taken in the same spot. This is the first authenticated record for Pennsylvania of Cooper's mouse, though it is not improbable that the type was taken within fifty miles of this place, either on that or the New Jersey side of the Delaware.

This, together with recent captures in New England and eastern Canada, may now be considered sufficient to fix the type habitat of Cooper's mouse east of the Alleghany Mountains, rather than west of them as was once considered possible, owing to the total lack of recorded eastern specimens.

In a recent paper, Mr. Outram Bangs[3] has endeavored to show that *Synaptomys stonei* described by me from southern New Jersey is a synonym of *S. cooperi.*

A comparison of the three specimens of *stonei*, taken at May's Landing, with individuals taken in New England by Mr. Bangs at the same season of year, show no cranial differences of value. In *stonei,* however, there is a decided difference in the darker colors of the pelage as contrasted with the New England skins and with the skin from Pike County. This is manifested in the blackish-brown of the back and upper head, the sooty feet and tail, and the lead-colored lower parts of *stonei,* contrasted with the gray-brown upper parts, light-brown feet and tail, and hoary under parts of the more northern specimens which, as I had previously inferred, were in all probability taken nearest the type locality of *cooperi.* In these particulars there is a striking correlation with the color differences pointed out by Mr. Stone for his subspecies of *Evotomys gapperi,*[4] taken in the same bog which furnished the types of *S. stonei.* On these grounds, taking for granted that *S. cooperi* is typified by the form found east of the Alleghany Mountains, I would now refer to the southern New Jersey lemming mouse as *Synaptomys cooperi stonei.*

My original description of *stonei* was drawn up from a comparison with two specimens from Ohio, and, so far as it went, was apparently a sufficient reason for specific separation. It is not impossible that a full series of western specimens will yet indicate the propriety of further division.

19. Zapus hudsonius (Zimm.). Meadow Jumping Mouse.

20. Zapus insignis Miller. Woodland Jumping Mouse.

I was surprised to neither see nor capture any of these mice during my stay. They had evidently just gone into their winter trance, and the loveliest Indian summer weather failed to rouse them. This is an interesting fact, as only a few days before my stay they had been seen by "mine host," and one of the woodland species (which I was surprised to find he recognized as different from the meadow jumping mouse) was killed by him as it swam across the Bushkill. Mr. Shryock took a specimen of *insignis* on Pocono Mountain in 1893.

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[3] Proc. Biol. Soc., Washn., 1894.
[4] Amer. Naturalist, Jan. 1893.

21. Erethizon dorsatus (L.). Canada Porcupine.

This is another boreal species whose presence on the Pocono plateau has always been rather precarious, and, with the vanishing forest areas, it has become so rare that it is believed by many hunters to be exterminated. The most active of these gentlemen have not seen any "for several years."

22. Lepus americanus Erxl. Varying Hare.

Not uncommon in the higher mountain swamps.

23. Lepus sylvaticus Bachm. Rabbit.

Normally abundant in all situations.

24. Felis concolor L. Puma, Panther.

A panther, I am assured by Mr. Eilenberger, has not been killed in Pike County for thirty years, all reports to the contrary notwithstanding. From conversation with several hunters it appears that the name "catamount" in this region is applied to any animal, not distinctly seen, which is larger than a wild-cat and has a longer tail, but is smaller than a panther! When a very large or abnormally colored wild-cat is trapped, it also may receive this higher sounding title. The yell of a wild-cat is a fruitful source of "catamount" stories, the horror of such an experience making the use of the commoner name a totally inadequate expression.

25. Lynx canadensis (Desm.). Canada Lynx.

Many residents near Porter's Lake assured me that this species is occasionally trapped in that vicinity. The occurrence of the lynx in these parts is not attested by any reliable records known to me.

26. Lynx rufus (Guld.). Wild-cat.

Many pelts of this destructive animal are annually taken in both counties.

27. Canis lupus nubilus (Say). American Gray Wolf.

I can get no information as to the date of the disappearance of the timber wolf from this part of the State. Conservative residents set it as nearly forty years ago, but it is probable they existed to a much later date.

28. Vulpes vulpes pensylvanicus (Bodd.). American Red Fox.

An abundant resident.

29. Urocyon cinereo-argenteus (Müll.). Gray Fox.

Occasionally taken by hunters.

30. Ursus americanus Pallas. American Black Bear.

Rarely killed, but evidences of their existence are frequently seen in the mountains. They hibernate in severe winters.

31. Putorius erminea (L.). Weasel, Ermine.

Specimens of this weasel were examined in the collection of Mr. Justin Nilis, of Edgemere, Pike Co. Two of them were in the white pelage.

32. Lutreola vison Schreber. Mink.

Abundant.

33. Mustela americana Turton. Pine Marten.

I could hear of no specimens of this former resident having been captured for many years. Of the Pekan, *M. pennanti*, none of the inhabitants had any knowledge.

34. Lutra hudsonica Lacèp. American Otter.

This fisherman is sufficiently numerous to be a nuisance to the owners of game preserves along the Bushkill. I found one in a trap on the banks of that stream near Yaggie's farm. They are frequently seen in Porter's Lake, and Mr. Van Vliet of that place states that they sometimes devour mussels in the same manner as the muskrat.

35. Mephitis mephitica (Shaw). Common Skunk.

Normally abundant. A visit was paid to the farm near Shawnee, in Monroe County, where these animals are being bred for their furs. Unfortunately no one was at home at the time, and I was unable to secure any data respecting the success of this experiment. A neighbor stated that the venture was not profitable and on the decline.

36. Procyon lotor (L.). Raccoon.

Stated to be very abundant.

37. ?Sorex forsteri Rich. Forster's Shrew.

I refer a small, brown shrew, taken in *Arvicola* runways, in a meadow near woodland, to this species, with some doubt. In its small size and the character of its coloration it agrees well with

Richardson's description. It was taken on the banks of the Bushkill where it crosses the southwestern corner of Pike County. It is similar to several specimens taken in Maine and central Quebec.[5]

38. ?Sorex ———.

Four specimens of a rather large, bluish-gray shrew answering Baird's description of *S. forsteri*, one taken at Yaggie's and three on Dingman's Creek, are very distinct from the preceding species in size, color, and habits. The *S. forsteri* of Baird I am convinced is not the same as the *S. forsteri* of Richardson. It is very probable that the four specimens in question are identical with the animal described by Baird as *forsteri*. What name, among the numerous existing ones, should be given this bluish-gray shrew with light colored feet and chin and brownish neck, forearm, chest, and vent, and bicolored tail, I am at a loss to know.

39. Sorex (Neosorex) albibarbis (Cope). Eastern marsh Shrew.

It is with no small satisfaction that I announce the discovery of a member of this subgenus in Pennsylvania. One specimen was taken along the banks of a rocky stream flowing into the Big Bushkill, in Monroe County. It is the most southerly record for the subgenus, the previous record being from Warwick, Massachusetts. After going over the ground somewhat, it appears proper to endorse the verification of Mr. G. S. Miller, Jr., in the Proceedings of the Boston Society of Natural History, in giving this shrew the name applied to New England examples by Prof. Cope in 1863. Specimens from Lac Aux Sables, Quebec, and from Lincoln, Maine, agree better, in the brownish cast of lower parts, with Prof. Cope's diagnosis of *albibarbis*, as contrasted with the "ash-colored" belly of *S. palustris* given by Richardson in the Fauna Boreali Americana.

In the Pike County specimen, though identical in dentition and proportionate measurements with my Canadian specimens, the colors are much as in Richardson's diagnosis of *palustris*, showing that the brown belly character is inconstant in eastern specimens. It is probable, however, that the exceptions are in immature pelage. For a full discussion of these questions, see paper by Mr. G. S. Miller, Jr., in the Proceedings of the Boston Society of Natural History, Vol. XXVI.

[5] Mr. G. S. Miller, Jr., has since identified these shrews to be *S. personatus* G. St. Hilaire.

40. Blarina talpoides (Gapper). Mole Shrew.

Excessively abundant in all sorts of situations, from wettest lowlands to barren mountain tops.

Owing to its numbers and carnivorous appetite this shrew is a great nuisance to the mouse trapper.

41. Scalops aquaticus (L.). Common Mole.

Rare among the mountains.

42. Condylura cristata (L.). Star-Nosed Mole.

Mr. Chas. Yaggie caught a specimen on his farm.

43. Adelonycteris fuscus (Beauv.). Carolina Bat.

44. Atalapha borealis (Müll.). Red Bat.

45. Vespertilio gryphus Fr. Cuvier. Little Brown Bat.

Several bats were observed, most, if not all, of which, are probably referable to these species.

I could find no one acquainted with a large bat which would be referable to the Hoary Bat, *Atalapha cinerea.*